

ABSTRACT

A braze material (10) including nano-sized filler material particles (14). The nano-sized particles will melt at a temperature significantly lower than the micron-sized particles used in prior art braze materials, thereby eliminating or reducing the need for the addition of temperature depressant materials such as boron or silicon. The resulting braze joint is substantially free of detrimental boride and silicides phases, thereby improving the material properties of the joint, eliminating the need for a separate post-braze diffusion heat treatment, and permitting a subsequent welding operation with reduced risk of cracking. The braze heat treatment may also function as a solution heat treatment, a pre-weld heat treatment or a post-weld heat treatment.